# BULLETIN

## OF THE INSTITUTE OF METALS

VOLUME 5 AUGUST 1960 PART 12


## WEST OF ENGLAND AUTUMN MEETING

**Bath, Monday to Friday, 5–9 September 1960**

As previously announced, the 1960 Autumn Meeting will be held in Bath from Monday 5 to Friday 9 September, inclusive. An attractive programme, including an interesting series of visits, has been arranged and the Council hopes that these will be well attended by members and their guests.

Details of the programme are given below. Members in Europe will receive a separately printed programme and reply form in connection with the meeting in due course.

### Monday, 5 September

*Location:* The Smoking Room, The Pump Room, Bath.

10.30 a.m.–12.30 p.m. and 2.0–5.0 p.m. The Secretary's office will be open for the registration of members and guests.

*Location:* The Concert Room, The Pump Room, Bath.

3.0 p.m. Opening Session, followed by tea.

*SCIENTIFIC PROGRAMME "A"*

4.0 p.m. *Theme: Engineering Properties of Nickel-Base Alloys.* A discussion based on the following papers published in the *Journal*:

E. Glenny and T. A. Taylor: "A Study of the Thermal-Fatigue Behaviour of Metals: The Effect of Test Conditions on Nickel-Base High-Temperature Alloys." (Serial No. 2010: July 1960).

C. W. Weaver: "Intergranular Cavitation, Structure, and Creep of a Nimonic 80A-Type Alloy." (Serial No. 1986: March 1960.)

C. W. Weaver: "The Influence of Heat-Treatment and Composition on the Microstructure and Creep Behaviour of a Nimonic 80A-Type Alloy." (Serial No. 2011: July 1960.)

*Location:* Old Sessions Court, The Guildhall, Bath.

*SCIENTIFIC PROGRAMME "B"*

4.0 p.m. *Theme: Lubricants for Cold Rolling Aluminium.* A discussion based on the following papers:

R. D. Guminski and J. Willis: "Development of Cold-Rolling Lubricants for Aluminium Alloys" (Serial No. 2015: August 1960).

J. A. Schey: "The Nature of Lubrication in the Cold Rolling of Aluminium and Its Alloys."

*Location:* The Pump Room, Bath.

6.30–7.30 p.m. Cocktail Party.

Evening. Free in Bath.

### Tuesday, 6 September

*Location:* The Concert Room, The Pump Room, Bath.

*SCIENTIFIC PROGRAMME "A"*

9.30 a.m. *Theme: Recovery and Recrystallization.* A discussion based on the following paper published in the *Journal*:

J. C. Blade, J. W. H. Clare, and H. J. Limb: "The Recrystallization Characteristics of Dilute Aluminium Solid Solutions Prepared from Zone-Refined Aluminium by Levitation Melting" (Serial No. 1995: April 1960).

*Location:* Old Sessions Court, The Guildhall, Bath.

*SCIENTIFIC PROGRAMME "B"*

9.30 a.m. *Theme: Engineering Properties of Alloys.* A discussion based on the following papers:

R. J. M. Payne and N. Bailey: "Improvement of the Age-Hardening Properties of Magnesium–Rare-Earth Alloys by the Addition of Silver" (Serial No. 2005: June 1960).

R. E. Lismer: "The Properties of Some Wrought Metals and Alloys at Very Low Temperatures."

Visits

Afternoon. (a) *Members and Male Guests.*

Capper Pass and Son, Ltd. (metal smelters) and Western Diecastings, Ltd., Bristol.

Stothert and Pitt, Ltd. (crane manufacturers), Bath.

Afternoon. Westland Aircraft, Ltd., Yeovil.
Philblack, Ltd. (carbon black manufacturers), Avonmouth.
British Railways, Swindon.

(b) *Ladies* (members may also take part, if desired).

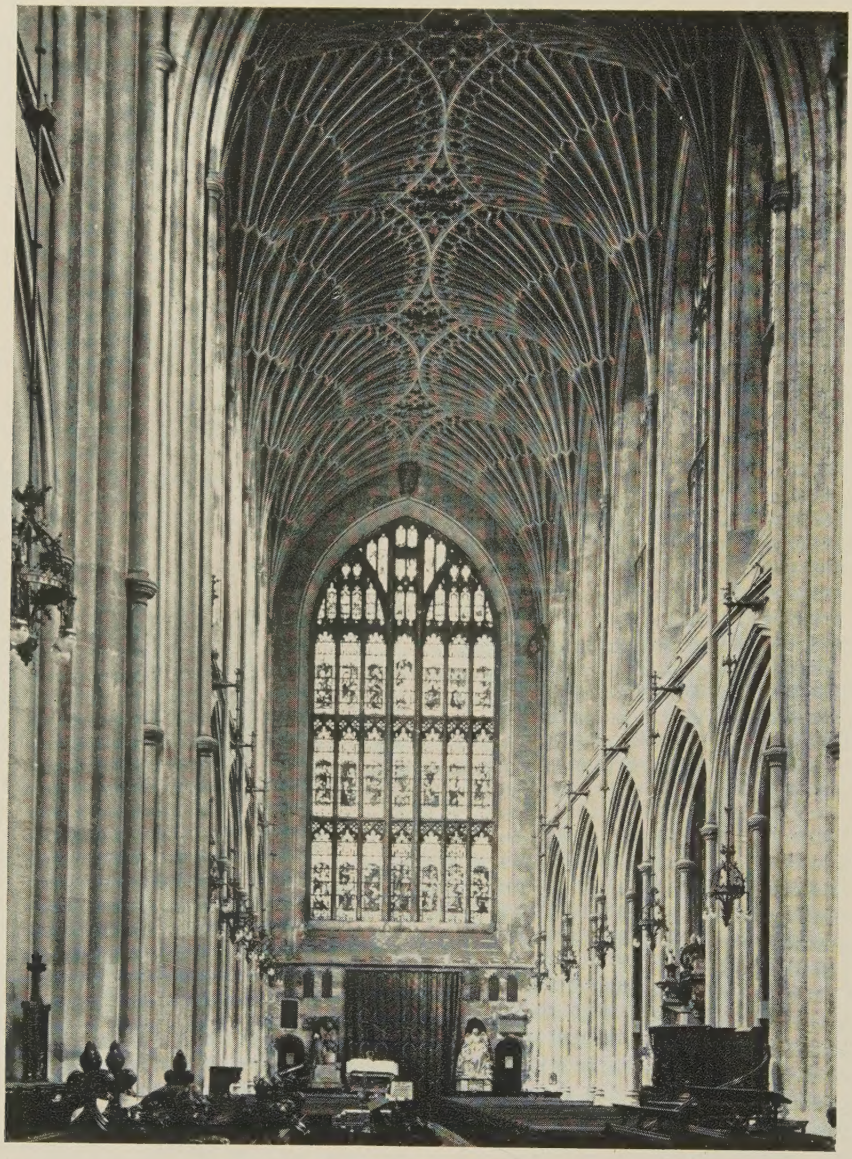
Lacock Abbey, Melksham.
Berkeley Castle, Berkeley.

## Wednesday, 7 September

VISITS

All day. (a) *Members and Male Guests.*

Bristol Aircraft, Ltd., and Bristol Siddeley Engines, Ltd., Bristol.
Henry Wiggin and Co., Ltd., Hereford.
Hoffmann, Gloucester, Ltd., Stonehouse.
Berkeley Power Station, Central Electricity Generating Board.



West Window, Bath Abbey

Severn Wild Fowl Trust, Slimbridge.
J. S. Fry and Sons, Ltd., Bristol.
Tour of Bath.

*Location:* The Pump Room, Bath.

8.0 p.m. CIVIC RECEPTION AND DANCE. *Dress:* Evening dress (tails or dinner jacket) or uniform.

(b) *Ladies* (members may also take part, if desired).

Longleat House, Warminster.
Stourhead, Mere.
Tour including Wells, Glastonbury, Wookey Hole, and Cheddar.

### Thursday, 8 September

*Location:* The Concert Room, The Pump Room, Bath.

*SCIENTIFIC PROGRAMME "A"*

9.0 a.m. *Theme: The Relative Merits of Extrusion and Other Methods for the Manufacture of Bar, Rod, and Wire-Rod.* A discussion based on:

J. B. RUSSELL and F. R. NICHOLS: "Equipment and Practice for Continuous Casting and Rolling by the Properzi Process" (Serial No. 1902: March 1959).

K. GERING and G. WILSON: "The Manufacture of Bar, Rod, and Wire-Rod in Copper and Copper-Base Alloys: A Comparison Between Extrusion and Other Methods" (Serial No. 1943: Oct. 1959).

J. F. MILLS and W. D. GRIFFITHS: "A Bar Mill for Titanium and its Alloys."

*Location:* Old Sessions Court, The Guildhall, Bath.

*SCIENTIFIC PROGRAMME "B"*

9.0 a.m. *Theme: Magnesium Alloys for Fuel-Element Components.* A discussion based on:

P. E. BROOKES, N. KIRBY, and W. T. BURKE: "The Creep and High-Temperature Fatigue Properties of the Magnesium-Base Canning Alloy Magnox A.12" (Serial No. 2017: Aug. 1960).

G. E. C. OLDS and G. M. MICHIE: "Creep-Resistant Magnesium Alloys for Nuclear Fuel Elements" (Serial No. 2016: Aug. 1960).

VISITS

Afternoon. (a) *Members and Male Guests.*

Imperial Smelting Corporation, Ltd., Avonmouth.

Westinghouse Brake and Signal Co., Ltd., Chippenham.

Vickers-Armstrongs (Aircraft), Ltd., Swindon.

(b) *Ladies* (members may also take part, if desired).

John Harvey and Sons, Ltd. (wine shippers), Bristol.

W. D. and H. O. Wills, Ltd. (tobacco and cigarette manufacturers), Bristol.

Tour of Bristol.

E. S. and A. Robinson, Ltd. (printers), Bristol.

*Location:* The Banqueting Room, The Guildhall, Bath.

Evening. BANQUET by invitation of the Reception Committee (evening dress or uniform, with decorations).

### Friday, 9 September

*Location:* The Concert Room, The Pump Room, Bath.

10.0 a.m. THIRTY-FIRST AUTUMN LECTURE: "Metals and the World of Engineering Structures", by PROFESSOR SIR ALFRED PUGSLEY, O.B.E., D.Sc., F.R.S., Professor of Civil Engineering, University of Bristol.

Final business session and votes of thanks.

# INSTITUTE NEWS

### War Office Representative on the Council

Major-General D. A. K. REDMAN, O.B.E., has succeeded Major-General L. N. TYLER, C.B., O.B.E., as representative of the War Office at Council Meetings of the Institute.

### "Metallurgical Reviews," Vol. 5, No. 17

The latest issue of *Metallurgical Reviews* contains: "The Theory and Practice of Vacuum Melting", by O. Winkler, and "Progress in Investment Casting", by R. L. Wood.

*Metallurgical Reviews*, published quarterly, is available only by annual subscription, the rates being: members 32*s.* 6*d.* ($5.00), post free; non-members 50*s.* ($7.50), post free.

### Election of Members

The following 22 Ordinary Members, 2 Junior Members, and 6 Student Members were elected on 7 June 1960:

*As Ordinary Members*

BAER, Hans Dieter, M.A., A.I.M., Metallurgist, Enfield Rolling Mills, Ltd., Brimsdown, Mddx.

BARNES, William, F.I.M., Managing Director, Beans Industries, Ltd., Tipton, Staffs.

BARRETT, Philip Leonard, A.C.T., Dip.Met., A.I.M., Deputy Chief Chemist, J. Lucas (G.T.E.), Ltd., Birmingham.

BLAKE, Paul Desmond, M.A., M.Inst.W., F.I.M., Research Metallurgist, Research Department, Murex Welding Processes, Ltd., Waltham Cross, Herts.

BROWN, Reginald Smith, M.B.E., A.M.C.T., F.I.M., Technical Manager and Director, Rylands Brothers, Ltd., Warrington.

GALLAGHER, Noel Thomas, B.Sc., Sales Manager, Metallurgy Division, Shandon Scientific Co., Ltd., London.

HERRICK, Kenneth Lee, B.S., Chief Process Engineer, Arwood Corp., New York, U.S.A.

HIGGINS, Daniel, Managing Director, Sendzimir, Ltd., London.

JACKSON, David Richard, A.I.M., Assistant Superintendent, Experimental Department, The British Aluminium Co., Ltd., Warrington.

LINDSTRAND, N. Erik, Head of Metallurgical Research, AB Svenska Metallverken, Finspäng, Sweden.

MCDONALD, Percival Charles, Assistant Manager, Holford Rod Mill, Imperial Chemical Industries, Ltd., Metals Division, Birmingham.

MALCOLM, Alan, L.I.M., Senior Analyst, General Laboratory, South Durham Iron and Steel Co., Ltd., Middlesbrough.

NADKARNI, Sadashiv Mahableshwar, B.S., Director, Simetals (Private), Ltd., Parel, Bombay, India.

RAO, Mudiam Kuppu, B.Sc., Works Manager, The Binani Metal Works (Private), Ltd., Calcutta, India.

RATCLIFFE, Stanley, Research Metallographer, A.E.I. (Woolwich), Ltd., Harlow, Essex.

RUPPRECHT, William J., M.S., American Car and Foundry Division, ACF Industries, Inc., Berwick, Pa., U.S.A.

SMOUT, John Kingsley, B.A., A.M.I.Mech.E., Manager, Non-Ferrous Extrusion Mill, Imperial Chemical Industries, Ltd., Metals Division, Birmingham.

SÖDERBERG, H. Lennart, Manager of Quality Control, AB Svenska Metallverken, Finspäng, Sweden.

TÖRNBLOM, Harald J. L., Works Director, AB Svenska Metallverken, Finspäng, Sweden.

VLISMAS, Theodore, B.Sc., A.R.I.C., Lecturer in Physical Chemistry, Department of Chemistry and Chemical Engineering, Glamorgan College of Technology, Treforest, Glam.

WOOLDRIDGE, Stanley John, Director, Metal Sales Co., Ltd., Birmingham.

WYATT, Leslie Mark, M.A., F.I.M., Chief Metallurgist, The Central Electricity Generating Board, London.

*As Junior Members*

HUGHES, William Thomas, B.A., Research Metallurgist, Research Laboratories, The British Aluminium Co., Ltd., Chalfont Park, Bucks.

SUNTER, Brian James, A.I.M., Assistant Lecturer in Metallurgy, Engineering Department, Kingston Technical College, Kingston-upon-Thames, Surrey.

*As Student Members*

DILLAMORE, Ian Leslie, B.Sc., Department of Industrial Metallurgy, University of Birmingham.

FAUNCE, Chester A., Student, School of Mines and Metallurgy, University of Missouri, Rolla, Mo., U.S.A.

FRANSSEN, Norbert, Student, Institut für Metallurgie und Metallkunde, Technische Hochschule, München, Germany.

HOLLOX, Graham Edward, Undergraduate, Department of Metallurgy, University of Birmingham.

PETERSON, Norman Lee, M.S., Graduate Student, Massachusetts Institute of Technology, Cambridge, Mass., U.S.A.

PETROVICH, Vladimir, Department of Mining and Metallurgical Engineering, University of Wisconsin, Madison, Wis., U.S.A.

# PERSONAL NOTES

MR. L. G. BERESFORD, Editor of *Metal Industry*, has been elected President of the Birmingham Metallurgical Society for 1960–61.

MR. C. BLAZEY has retired from his position with Metal Manufacturers, Ltd., Port Kembla, N.S.W.

DR. TREVOR BROOM has been appointed Head of the Materials Laboratory of the Central Electricity Generating Board, Leatherhead.

MR. W. A. COSTLEY is now metallurgical chemist with Sterling Metals, Ltd., Nuneaton.

MR. A. H. FOTHERBY, having completed his studies at the Battersea College of Advanced Technology, has taken up a post as Metallurgist with the Hawker Siddeley Nuclear Power Co., Ltd., Langley, Bucks.

MR. D. W. HALL has been appointed Chief Metallurgist, Rolls-Royce, Ltd., Derby.

DR. D. E. R. HUGHES has left the U.K. Atomic Energy Authority to become Technical Manager, Experimental Nuclear Department, Rolls-Royce, Ltd., Derby.

DR. D. HULL has left the Atomic Energy Research Establishment and is now a lecturer in metallurgy at the University of Liverpool.

# NEWS OF LOCAL SECTIONS

## London Local Section

### Joint Meeting with the Institute of Metal Finishing

The London Local Section is to hold a joint meeting with the London Branch of the Institute of Metal Finishing on Monday, 17 October 1960. At this meeting Mr. C. Williams, of the Armament Research and Development Establishment, will give a lecture on "Electroplating Processes and their Effect on Fatigue Strength and Embrittlement of the Substrate." The meeting will take place at the Northampton College of Advanced Technology, St. John Street, London, E.C.1, at 6.15 p.m.

# OTHER NEWS

## Postgraduate Course in Aircraft Materials

The aircraft industry is particularly concerned at the present time with the advanced use of materials, both metals and non-metals, and is encouraging those with the appropriate knowledge and experience to join the industry for research and development work in this field. The Department of Materials at the College of Aeronautics, Cranfield, is offering advanced courses of both one-year and two-year duration to suitably qualified people with the aim of producing balanced materials engineers for the industry. The next courses begin in October 1960.

The Department is particularly interested in attracting to these courses metallurgists of graduate, or A.I.M., status. The courses are residential, the academic year consisting of three ten-week terms, similar to the University terms, and bursaries of £385 per annum are available for those accepted for entry. In addition, certain students may be able to obtain the sponsorship of particular aircraft companies, in which case a higher grant would be possible. Such a grant naturally carries with it an obligation to enter the company's service at the end of the course.

The College awards to successful students either the D.C.Ae. (Diploma of the College of Aeronautics), which is accepted throughout the industry as a high postgraduate qualification, or the D.A.E. (Diploma in Advanced Engineering), which is of a similar standing, but is confined to those students who undertake a course with a more general materials content, that is, with less specialization in specifically aircraft subjects. Apart from lectures and laboratory work, the students on these courses undertake a one-year research project, which, in the case of the two-year students, occupies the major part of their second year. Further details of the courses can be obtained from Professor A. J. Kennedy, The College of Aeronautics, Cranfield, Bletchley, Bucks.

## Royal Institution Library

The Managers of the Royal Institution wish it to be known that the Institution's Library is open for purposes of study to persons who are not Members of the Institution. Admission to the Library is by means of Reader's Tickets, for which no charge is made. Holders of such tickets may use the Library for reference purposes only; they are not entitled to borrow books.

Applications for Reader's Tickets should be made on a form obtainable from the Secretary. Each applicant, who

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| No. 25.—Annotated Equilibrium Diagrams of Some Aluminium Alloy Systems. By H. W. L. Phillips | 1 10 0 | 4·65 | 1 1 0 | 3·50 | 1 5 0 | 3·75 |
| (*Note.*—Monographs Nos. 4, 5, 6, 8, 9, 10, 12, 14, 15, 16 and 17 are now out of print.) | | | | | | |
| **Annotated Equilibrium Diagrams** | | | | | | |
| No. 1—Al–Zn; No. 2—Cu–Sn; No. 3—Cu–Zn; No. 4—Al–Cu; No. 5—Al–Mg; No. 6—Pb–Sn; No. 7—Be–Cu; No. 8—Fe–Zn; No. 9—Sb–Pb; No. 10—Cu–Ag; No. 11—Fe–Ni; No. 12—Cd–Zn; No. 13—Al–Fe; No. 14—Al–Sn; No. 15—Al–Sb; No. 16—Al–Si; No. 17—Al–Mn; No. 18—Al–Ni; No. 19—Al–Be; No. 20—Al–Co; No. 21—Al–Ag; No. 22—Al–Ti; No. 23—Sb–Sn; No. 24—Cu–S; No. 25—Cr–Fe; No. 26—Fe–Mn; No. 27—Fe–V; No. 28—Mg–Mn; No. 29—Mg–Zn; No. 30—Co–Fe, each | 5 0 | 1·15 | 3 6 | 0·95 | 4 2 | 1·00 |
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must be over 18 years of age, will need to be sponsored by a responsible person to whom he is personally known. Full details are included on the form of application.

Information about the Library and its contents may be obtained from the Secretary or Librarian of the Royal Institution, 21 Albemarle Street, London, W.1.

### International Symposium on Agglomeration

An International Symposium on Agglomeration, to be held at the Sheraton Hotel, Philadelphia, on 12–14 April 1961, is being organized by the American Institute of Mining, Metallurgical, and Petroleum Engineers.

The underlying theme will be the basic mechanisms common to agglomeration processes in general. Specifically, the Symposium will deal with the processes of sintering, pelletizing, nodulizing, briquetting, powder metallurgy, ceramic bonding, and related processes. Areas of application will be not only ferrous and non-ferrous ores, but also will include carbonaceous materials, ceramics, and other non-metallics. Emphasis will be, principally, on the fundamental aspects of agglomeration. Descriptions of existing plant will be limited to examples and proof of application.

Planned to be comprehensive in scope, the programme will begin with characterization of raw materials to be agglomerated and preparation of charge, progressing through consideration of various agglomerating processes to a discussion of the evaluation and utilization of agglomerating products.

Many of the technical papers, by specialists of the United States, Canada, England, France, Germany, and other countries, are planned to present new concepts, methods, and devices for investigating agglomerate mechanisms and for evaluating the agglomerates for utilization. Attention also will be devoted to process economics, scale-up factors in design and automation of process control. Six non-simultaneous sessions are planned.

### Pittsburgh Diffraction Conference

The annual Pittsburgh Diffraction Conference will be held from 9 to 11 November 1960 at the Mellon Institute, Pittsburgh, Pennsylvania. Sessions will be devoted to metals and alloys, instrumentation, structures, polymers and fibres, refractories, electron probe, and electron diffraction. Further information can be obtained from L. F. Vassamillet, Mellon Institute, 4400 Fifth Avenue, Pittsburgh 13, Pennsylvania.

## APPOINTMENTS VACANT

**PHYSICAL METALLURGIST** is required for the Research Laboratories of Firth Brown Tools Limited. Applicants should be under 30 years of age and possess a Degree, or equivalent qualification, in Metallurgy. The work involved will largely be concerned with powder metallurgy but will also embrace problems of research connected with the manufacture of Engineers' Cutting Tools. Salary will be in accordance with age, experience, and academic standard attained. Apply in writing to the Labour Manager, Speedicut Works, Carlisle Street East, Sheffield 4.

**QUALIFIED METALLURGIST or CHEMIST** required for development work and research on mechanized welding processes. Initiative essential, some industrial experience and knowledge of arc-welding procedures desirable. Excellent working conditions, good salary and prospects. Apply Murex Welding Processes Limited, Hertford Road, Waltham Cross, Herts.

**ROYAL MILITARY COLLEGE OF SCIENCE,** Shrivenham, Berks., requires GRADUATE DEMONSTRATORS (male) in CIVIL, MECHANICAL, and ELECTRICAL ENGINEERING, PHYSICS, METALLURGY, and BALLISTICS. Teaching is at University level. Demonstrators required to assist in supervision of Students' laboratory work and in research undertaken by Staff and Students. Extensive well-equipped laboratories. Demonstrators encouraged to engage in personal research towards higher degree. Quals.: 1st or 2nd class hons. degree or equiv. Salary range: £650–£785, with superannuation under F.S.S.U. Appointments normally for 3 years but may be extended. Quarters available for single men; possibility of houses for married men. Forms from Ministry of Labour, Technical and Scientific Register (K), 26 King Street, London, S.W.1, quoting A.266/OA.

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**COMMONWEALTH OF AUSTRALIA**

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**ELECTROMETALLURGY AND ELECTROFINISHING**

The Department of Supply invite applications for the following vacancy at the Weapons Research Establishment, Salisbury, South Australia:—

**ENGINEER GRADE 3 (Permanent Position)**

**SALARY:** £1,730/£1,950 (AUST. CURRENCY).

**DUTIES** (Post No. 100): Control a wide variety of electrometallurgical processes and organize production in the section and/or investigate and develop electrofinishing processes and techniques for use in the section.

**QUALIFICATIONS:** Degree in Metallurgy or Chemistry or other qualifications which would satisfy for admission to corporate membership of the appropriate professional Institute.

**CONDITIONS:** Under specified conditions, first class air/sea transport for the appointee and dependants (wife and dependent children) will be provided by the Commonwealth. Assistance will be given in obtaining housing accommodation.

**APPLICATIONS:** Forms obtainable from the Senior Representative (AV.66/9), Department of Supply, Australia House, Strand, London, W.C.2, with whom completed applications should be lodged as soon as possible.